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A NEW GENUS AND SPECIES OF AMERICAN THEROMORPHA

MYCTEROSAURUS LONGICEPS

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The past summer, Mr. Herman Douthitt, of the University of Chicago paleontological expedition, discovered on Mitchell Creek, Texas, in the horizon that has yielded various specimens of *Pantylus* and the type specimens of *Broiliellus* and *Glaucosaurus*, a broken skull and parts of the skeleton of a small reptile which, at the time, were thought to belong to the genus *Varanops*. Although it resembles that genus in shape and general characters, a more careful examination disclosed a new and peculiar form of Theromorpha.

The specimen is of a nearly white color, inclosed in a rather hard, siliceous red clay, from which the bone readily separates, leaving impressions as though made in wax. The skull had suffered a little from compression, but is otherwise undistorted. It was originally quite complete, but, as found, some of the bones had separated from the matrix and been lost; and the tip of the premaxillæ was gone. This partial loss of the bony structure, on one side or the other, while detracting from the appearance of the specimen, has made vividly apparent nearly every suture; others are clearly shown in the bone itself. The sutures of the inner side of the cranial bones are not always quite the same as on the outside; as an instance of which, the shape and size of the postfrontal of *Pantylus* is quite as Case and Huene figured it, while on the outside Broom gave the form correctly; and the quadratojugal of the same genus is nearly twice as broad on the inside as on the outside. In the figures given herewith (Figs. 1, 2) I have widened the face a little in top view, perhaps not quite enough. I have depended in no instance on any line indicating a suture unless it is precisely corroborated on the two sides, precluding the danger of mistaking cracks for

sutures. These figures will, I trust, render a detailed description for the most part unnecessary. The points of interest meriting

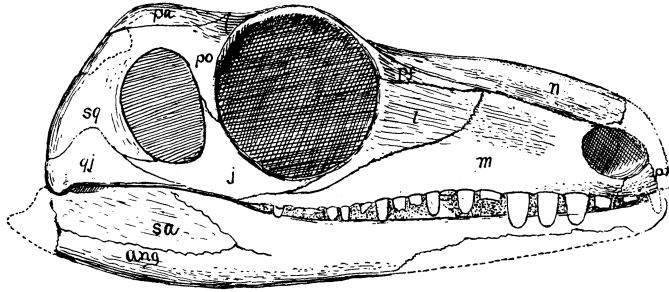


FIG. 1.—*Myclerosaurus longiceps* Will. Skull from the side. *n*, nasal; *pm*, premaxilla; *m*, maxilla; *l*, lacrimal; *pf*, prefrontal; *pof*, postfrontal; *po*, postorbital; *j*, jugal; *qj*, quadratojugal; *sq*, squamosal; *pa*, parietal; *f*, frontal; *ds*, dermosupraoccipital; *so*, supraoccipital; *sa*, surangular; *ang*, angular.

discussion are the nares, orbits, lacrimals, the boundaries of the temporal opening, and the structure of the occiput.

The nares are unusually large, as are also the orbits. The latter are nearly circular in outline, and look almost directly outward. They project above the frontal region, which is concave transversely between them. Within the orbits the broad smooth upper surface of the palatines is apparent, as also the narrow pterygoid; both bear small, conical teeth. The lacrimals do not reach the nares, as has been assumed without positive proof for some of the American Theromorpha. On the two sides not only do the sutural lines agree exactly, but the smooth, clean surface in front shows no trace of a suture on either side.

The jugo-postorbital arch is slender; on the right side it is bent inward, separating at the suture; on the left side it is broken in two or three places. The quadratojugal is definitely shown on each side. Because of the squamous

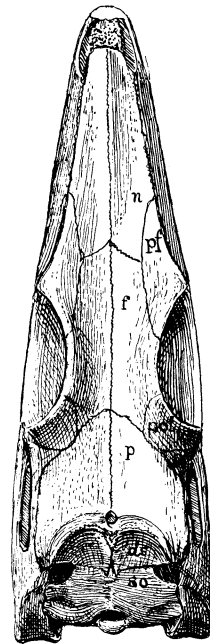


FIG. 2.—*Myclerosaurus longiceps*. Skull, from above. Explanations as in Fig. 1. Both figures natural size.

overlap of the squamosal one cannot be quite sure of the course of the suture externally, but it descends no lower than I have figured it. Above, the squamoso-postorbital arch is shown very decisively on each side, but I cannot be sure of the suture separating the two bones, and have, therefore, omitted it. I find no definite evidence of a tabulare or supra-temporal in this region, though it is not at all improbable that one or both are present. Posteriorly the squamosal covers the quadrate broadly. The temporal opening is moderately large and oval in form. It is bounded, it will be seen, almost precisely as in *Sphenodon*. The parietal on each side is slightly separated from the squamoso-postorbital arch, indicating one way in which the upper temporal opening in *Sphenodon* may have arisen. The parietal foramen is situated almost at the extreme posterior end of the parietals, and very close to the dermosupraoccipitals. On each side the parietals are curved downward to near the top of the quadrate, but I find no evidence of a suture separating the extremity of the processes.

The occipital surface is but little injured and quite clean of matrix. On the upper part of the steeper declivity, between the descending processes of the parietals, there is a thin, concave bone on each side, lying against the back part of the parietals, and somewhat separated in the middle line above by a descending process of the same bones. Below, each bone diverges a little to fit into a small groove on the upper external surface of the supraoccipital. The suture between these bones and the supraoccipital on each side is very conspicuous. The bones extend outward to the extremity of the posterior parietal processes. There is a small but distinct post-temporal opening on each side between the supraoccipital, dermosupraoccipital, and squamosal.

On the large surface below the dermosupraoccipitals and the temporal fossae I can distinguish no sutures. In shape, the surface is very much like that of *Dimetrodon*, as shown in the accompanying figures (Figs. 3, 4) made from a viewpoint at right angles to the plane of the supraoccipital. The paroccipital process is separated from the upper, supraoccipital process in the same way; and their union with the quadrate is very similar in both genera. I am aware that this bone in *Dimetrodon* has been differentiated into the dermo-

supraoccipital and supraoccipital, in addition of course to the paroccipitals, exoccipitals, and petrosal, but I can find no evidence whatever for the inclusion of the first-mentioned bone in the complex. I have sectioned various specimens, and studied numerous others. If, then, these bones correspond—and they surely do—there are no dermosupraoccipitals in *Dimetrodon*, or they have been reduced to the merest vestige, as in the modern gavials. As will be seen by the figure (Fig. 4, *po*) the surface of the supraoccipital articulating with the parietals above is cartilaginous, corresponding to the condition found in the dinosaurs, crocodiles, lizards, etc. The exoccipitals in *Mycterosaurus* surround the foramen magnum and are loosely attached, as in *Dimetrodon*. From below, not much is visible. The descending process of the paroccipital for the stapes is visible from behind, but I do not discover either the stapes or the tympanic, both of which are present in *Dimetrodon* (Fig. 4, *t*, *st*). This last figure is introduced here anticipatory of a full discussion of the cranial anatomy of this and other genera, which will be published later.

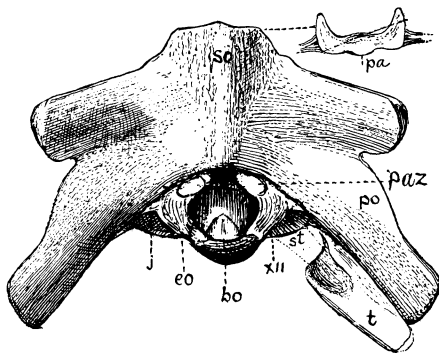


FIG. 3.—*Dimetrodon*. Occipital complex, obliquely from behind. *so*, supra-occipital; *paz*, proatlantal zygapophysis; *po*, paroccipital; *st*, stapes; *t*, tabulare; *bo*, basioccipital condyle; *eo*, exoccipital; half natural size.

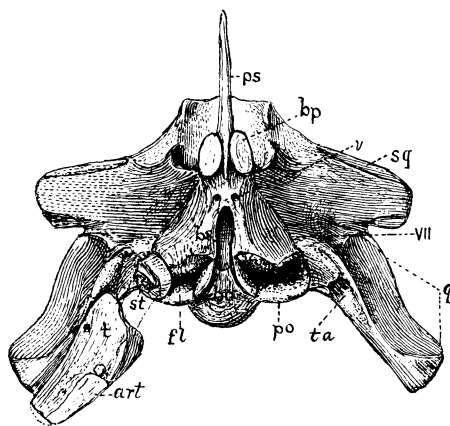


FIG. 4.—*Dimetrodon*. Occipital complex, view opposite to that of Fig. 1. *ps*, parasphenoid; *bp*, basiptyergoid process; *bs*, basisphenoid; *bo*, basioccipital; *st*, head of stapes; *t*, tympanic; *ta*, articular pit in paroccipital for tympanic; *art*, articular surface; *po*, paroccipital.

The teeth in *Mycterosaurus* are characteristically different from those of *Varanops*, *Ophicaodon*, *Dimetrodon*, or *Edaphosaurus*. Altogether there are about eighteen, possibly one more, on each maxilla, the first four or five the largest. They are moderately elongated and flattened, with a rather obtuse apex.

Of the skeleton of this specimen, there are fragmentary vertebrae, and a coraco-scapula. The posterior coracoid is well ossified and not distinguishable from the anterior. It has a straight line below and is rather narrow. The interclavicle appears to be of the usual form, and very unlike the extraordinary interclavicle of *Pantylus*. The vertebrae, so far as they are preserved and prepared, are like those of *Varanops*. The spine is thin, and not more than two or three times the height of the centra.

Relationships.—There can scarcely be dissent from the opinion that *Mycterosaurus* is related to *Dimetrodon*, and should find its natural place in the same suborder, the Pelycosauria, though in a different family. The skull and vertebrae are more primitive, but both have the same relations of the bones, the same temporal opening, and the same elongated, narrow skull. The lower jaw lacks the inflected angular process below, but that is a specialization that would hardly be expected in the more primitive form. I am aware that this peculiarity has been largely relied upon as indicative of the relationships between the American and African Theromorpha, but I am skeptical of its value. No other American genus shows it, except, in a lesser degree, *Sphenacodon* and *Edaphosaurus*, and these are all highly specialized animals with elongated spines.

The family determination of *Mycterosaurus*, until more of the skeleton is known, is doubtful; it may provisionally be placed in the Poliosauridae. Of the American reptiles, nearly every specimen that can be differentiated by decisive characters represents a distinct genus; and the majority of genera, when fully known, are more or less justly placed in distinct families. The following genera, it seems to me, are rightly separated in different families; a fuller knowledge may require further division.

Sphenacodontidae

Clepsydrops Cope

Sphenacodon Marsh

Dimetrodon Cope

Ophiacodontidae

Ophiacodon Marsh

Theropleura Cope

Poliosauridae

Poliosaurus Case

Varanosaurus Broili

Varanops Williston

?Mycterosaurus Williston

?Arribasaurus Williston

Edaphosauridae

Edaphosaurus Cope

Caseidae

Casea Williston

Together with *Trichasaurus* Williston, *Scoliomus* Williston and Case, *Poecilospondylus* Case, *Glaucosaurus* Williston, *Elcobresaurus* Case, of more doubtful position, these are all that can be definitely located among the American Theromorpha, that is zygomorphous reptiles, with the temporal vacuity below the squamoso-postorbital arch. *Ostodolepis* Williston is a synonym of *Pantylus* Cope.